

Top collaborations and research in electrification in Sep 2020

September 2020 | **Bulletin
Battery Energy Storage**

What's inside?

- Deeper analysis of the most important developments that took place in the month of September
- Spotlight focusing on LG Chem emerging as market leader in H1 2020



THEMES AND KEY TAKEAWAYS IN September Bulletin

01 Top highlights of September

02 Spotlight

03 Appendix

Themes covered in this scope



Top highlights in September

- What were the major developments in September?
- How do the September month compares with August?

Spotlight



- [LG Chem](#) leads in battery market during the COVID period displacing CATL and Panasonic

Key Takeaways

- September was associated with many crucial collaboration activities covering almost all the aspects of the battery value chain that includes production, recycling, second-life, and battery management. The most important collaboration was [GM-Analog Devices](#) for the new **wireless battery management system** (wBMS), which is claimed to be the industry's first. It can save up to 90% of the wiring and up to 15% of the volume in the battery pack
- Our comparative analysis of September with August reflects a **considerable increase** in the activities. The most eye-catching development was the launch of [Solid-state powered eCitaro G](#) by Daimler that opens the doors for the fast commercialization of solid-state batteries.
- Due to the ongoing pandemic, China suffered the most in terms of battery activities. This presented an opportunity for South Korean manufacturers to expand their dominion in the battery market. South Korean EV battery trio LG Chem, SK Innovation, and Samsung SDI enhanced their market worldwide throughout the COVID-19 pandemic to emerge as the market's top picks. Among them, LG Chem leads the race displacing CATL and Panasonic.

Milestones – Numbers of the month



In India, approximately **27,201** electric vehicles were subsidized under the FAME II program by the cut-off date of 10 September 2020, according to the Indian government. Also, there are **5,595** electric buses for which funding has got approved



A BEV share of **16%** was recorded among new registrations in August in the Netherlands, with plug-in hybrids accounting for another **5%**. Specifically, **4,332 BEVs** and **1,348 PHEVs** got registered in the Netherlands last month. The most successful plug-in model was the **Tesla Model 3** (609 registrations), just ahead of the **Kia Niro EV** (599).



Some **109,000** New Energy Vehicles (BEVs, PHEVs, and FCEVs) were sold in China in August, **25.8%** more than in the same month last year. Around **88,000** of these vehicles were BEVs. In the first eight months of the year, approximately 596,000 NEVs were sold in China, 26.4% less than in the same period last year.



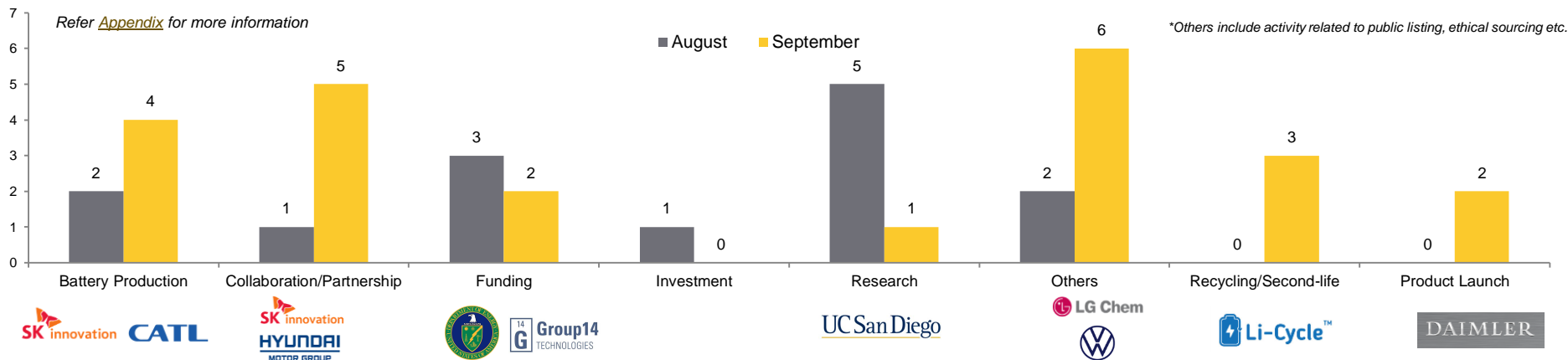
A total of **5,589 BEVs** were registered in the UK during August, marking an increase of **77.6%**. At the same time, **2,922 PHEVs** were registered (+**221.1%**), and **diesel** vehicles recorded a drop of **39.5%**. **Petrol** cars also recorded a fall of **14.7%**.



Geographic accomplishment

Comparative analysis of activities – August vs. September

Increased collaboration/partnership activities were witnessed in September. Some high profile partnerships included [PSA-Total](#), [Hyundai-SK Innovation](#), and [GM-Analog Devices](#). The most eye-catching development was the launch of [Solid-state powered eCitaro G](#) by Daimler.



Key takeaways

- September got associated with many crucial collaboration activities covering almost all the aspects of the battery value chain that includes production, recycling, second-life, and battery management. The most important collaboration was [GM-Analog Devices](#) for the new **wireless battery management system** (wBMS), which is claimed to be the industry's first. It can save up to 90% of the wiring and up to 15% of the volume in the battery pack. Another crucial collaboration was [Hyundai-SK Innovation](#) that aims at the development of a sustainable ecosystem for electric vehicle (EV) batteries, including **Battery as a Service** (BaaS) also.
- The expansion of battery facilities remains the primary objective of Chinese and South Korean players. Battery manufacturers such as CATL, SK Innovation, and Envision are pushing for the expansion of production facilities. [SK Innovation](#) is keen on penetrating the European market with the aim of a third battery plant in Hungary. Chinese battery players such as CATL and Envision are also making similar efforts. [CATL](#) has partnered with the Sichuan government for the construction of a full lithium battery-related industrial chain to seize the significant opportunity of the fast growth in new energy vehicle (NEV) applications.
- Recycling of batteries also saw some crucial developments. Canadian startup [Li-Cycle](#) will invest more than **\$175M** in this plant in Rochester, New York State. The facility is expected to be sufficient to recycle the materials from approximately 120,000 e-car battery packs. Besides recycling, the second-life of batteries is also gaining momentum for providing diverse applications such as powering buildings. In this regard, Volvo buses [partnered](#) with Batteryloop.

A close-up, shallow depth-of-field photograph of a server rack. The focus is on the front panel of a server unit, showing a series of horizontal slots or ports. In the background, several bright orange cables are plugged into the rack, creating a strong contrast against the dark, blurred background. The lighting is dramatic, highlighting the textures of the metal and plastic components.

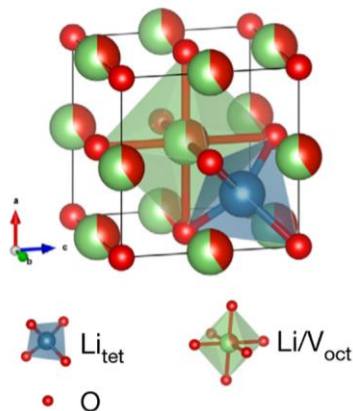
01

Top developments of the
month

UCSD researchers develop new disordered rock salt anode for fast-charging and safer lithium-ion batteries

"For a long time, the battery community has been looking for an anode material operating at a potential just above graphite to enable safe, fast charging lithium-ion batteries. This material fills an important knowledge and application gap. We are excited for its commercial potential since the material can be a drop-in solution for today's lithium-ion battery manufacturing process." - Ping Liu, Department of Nanoengineering, University of California, San Diego

Read paper here 




Crystal structure of disordered rock salt ($\text{Li}_{3+x}\text{V}_2\text{O}_5$)

UC San Diego

02 Sep 2020

Press release

Read this story 

Scientists at UC San Diego have discovered a new anode material that enables lithium-ion batteries to get safely recharged within minutes for thousands of cycles. The material is known as disordered rock salt and is made up of earth-abundant lithium, vanadium, and oxygen atoms arranged in a similar way as kitchen table salt, but randomly. It is promising for commercial applications where both high energy density and high power are crucial, such as electric cars, vacuum cleaners, or drills.

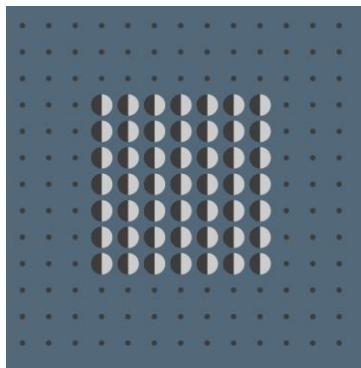
Analyst comment

News type: Research

- Currently, two materials used as anodes in most commercially available lithium-ion batteries are graphite and lithium titanate. The most common is a graphite anode that is energy-dense but recharging a graphite anode too quickly can result in fire and explosions due to a process called lithium metal plating. A safer alternative, the lithium titanate anode, can be recharged rapidly but results in a significant decrease in energy density, which means the battery needs recharging more frequently. With these challenges in mind, the researchers at UCSD developed a new material as anode called disordered rock salt ($\text{Li}_{3+x}\text{V}_2\text{O}_5$) that is safer to use than graphite, yet offers a battery with at least 71% more energy than lithium titanate.
- The researchers observed that the $\text{Li}_3\text{V}_2\text{O}_5$ anode can be cycled for over 6,000 cycles with negligible capacity decay, and can charge and discharge energy rapidly, delivering over 40% of its capacity in 20 seconds.
- Similar research work has been done recently in H1'20, where the focus is faster charging and safety of Li-ion batteries. Research institutes such as the [Korea Institute of Science and Technology \(KIST\)](#) have developed a new battery made of silicon anode materials that can double the driving range and charges up to 80% in five minutes. [Karlsruhe Institute of Technology \(KIT\)](#) and Jiilin University have investigated LLTO (Lithium Lanthanum Titanate) anode material for safe batteries with long cycle life.
- Startups such as Enovix and Leydenjar are also working in the same direction. Enovix recently secured [\\$45 M](#) to produce and commercialize its [3D Silicon™ Lithium-ion Battery](#) and is working towards developing its patented battery technology for the electric vehicle market. The initial results reveal that the cells can achieve gravimetric energy density greater than 340 Wh/kg. [Leydenjar](#), a Dutch startup, has claimed that its silicon anode boosts Li-ion battery energy density by 70% to 1350 Wh/L while producing 62% less CO2 emissions.

The US DOE awards Group14 Technologies \$3.96M to break technology barriers for Lithium-Ion batteries

“Group14 shares the DOE’s vision to increase the energy density, calendar life and cycle life of lithium-ion batteries, and we’re pleased with the recognition for our innovative approach to a long-time challenge. Globally, we’ve seen an increase in demand for longer-lasting, higher-performance lithium-ion-powered devices and vehicles, and with this funding, we are shaping the leading edge of what is possible.” - Rick Costantino, CTO, Group14 Technologies



SCC55™



01 Sep 2020

Press release

Read this story →

Group14 Technologies, a provider of silicon-carbon composite materials for global lithium-ion markets, revealed that it has got selected as a winner of the Department Of Energy’s Energy Storage Grand Challenge. It will receive a \$3.96-million award to integrate best-in-class synergistic technologies, delivering batteries that will meet the performance objectives for future electric vehicles. The Vehicle Technologies Office of the DOE issued the challenge to accelerate scalable solutions to meet the demands for lithium-ion-based storage.

Analyst comment

News type: Research funding

- Group14 has developed a new elemental approach to produce ultra-high purity, high capacity silicon-carbon compound materials at low-cost to power the electrified market. Group14’s technology applies complex polymer chemistries to create high-performance silicon-carbon nano-composites.
- Group14’s nanomaterials technology, [Scaffold Prime™](#), is a patented, simple carbon chemistry process that transforms ultra-high purity raw precursors into silicon-carbon material, then synced to the ideal electrochemical properties per given use case.
- Group 14’s flagship silicon-carbon powder - [SCC55™](#) has **5x higher capacity** and affords **50% more energy density** than conventional graphite for Li-ion battery anodes. Its unique hard-carbon-based scaffolding keeps silicon in the ideal form – amorphous, nano-sized, and carbon-encased. The result is the best-in-class anode material that exhibits outstanding first cycle efficiency and long life upon Li-ion battery cycling.
- Group14, along with key project partners, Cabot Corporation, will work together with Farasis, Silatronix, Arkema, and Pacific Northwest National Laboratories to commercialize this novel approach to meet the demand for higher-performance batteries. Key project partner Cabot Corporation will provide solutions for carbon formulation and dispersion development, drawing from its broad range of carbon materials for battery applications.
- In Nov 2019, Group14 announced [\\$18 million](#) in new financing from Amperex Technologies Limited (ATL), Showa Denko (SDK), Cabot Corporation, BASF Venture Capital, and OVP Venture Partners. The new funds are to scale up the manufacturing of next-generation anode material and advance into commercial production.

Hyundai & SK Innovation collaborate for battery eco-system

“This collaboration between Hyundai Motor Group, which is leading the popularization of EVs in the global market, and SK Innovation, which possesses the advanced technology in battery development and recycling, is highly meaningful in that the two have joined forces to collaborate across the entire EV cycle. Both companies will create a seamless collaboration system to explore new business opportunities across the whole battery value chain.” - Dongseob Jee, President of SK Innovation’s Battery Business



08 Sep 2020 Press release [Read this story](#) ➔

Hyundai Motor Group and SK Innovation Co. have agreed to co-operate in the development of a sustainable ecosystem for electric vehicle (EV) batteries that are key to the future mobility industry. The two companies announced their plan to co-operate in diverse business areas related to the EV battery industry, including battery sales solutions, battery management service, battery reuse, and recycling.

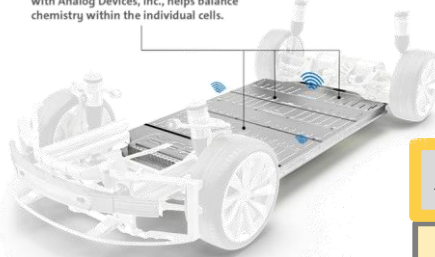
Analyst comment	News type: <i>Collaboration/Partnership</i>
<ul style="list-style-type: none"> ➤ The co-operation of the South Korean companies will include various business areas not directly related to cell manufacturing. The planned co-operation in battery distribution will also include leasing and rental offers, thus enabling “Battery as a Service (BaaS)” offers to end customers. However, the batteries need to be adapted for this purpose also. The aim is to find an optimal design that will allow the batteries to be used in electric cars while meeting the requirements for second-life applications and recycling. ➤ First, the two partners want to analyze the battery of a Kia e-Niro in detail as an example and develop the processes based on the data obtained. ➤ The co-operation is also expected to have an impact on business units that initially have nothing to do with electromobility. To this end, the two companies have announced that they will analyze the business structures of their respective subsidiaries in different sectors and leverage synergies. One of the aims is to expand growth in related sectors. ➤ Apart from collaborating with SK Innovation, Hyundai Motor Group is striving to secure and open up new markets by collaborating with global players specializing in EV battery reuse, including Korea Hydro & Nuclear Power Co., Wärtsilä, OCI, and Hanwha Solutions. The Group, through the collaboration with SK Innovation Co., plans to fundamentally reinforce its technological competitiveness by securing technology and infrastructure and expand its business areas. 	

GM and Analog Devices partner for industry's first wireless battery management system

"Scalability and complexity reduction are a theme with our Ultium batteries – the wireless battery management system is the critical enabler of this amazing flexibility. The wireless system represents the epitome of Ultium's configurability and should help GM build profitable EVs at scale." - Kent Helfrich, GM executive director of Global Electrification and Battery Systems



The wireless management system, developed with Analog Devices, Inc., helps balance chemistry within the individual cells.



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09 Sep 2020

Press release

Read this story

General Motors will be the first automaker to use a completely wireless battery management system (wBMS) for production electric vehicles. This wireless system, developed with Analog Devices, Inc., will be a primary driver of GM's ability to ultimately power many different types of electric vehicles from a common set of battery components. The wBMS is expected to drive GM's Ultium-powered EVs to market faster, as time is not needed to develop specific communications systems or redesign complex wiring schemes for each new vehicle. Instead, the wBMS helps to ensure the scalability of Ultium batteries across GM's future lineup, encompassing different brands and vehicle segments, from heavy-duty trucks to performance vehicles.

Analyst comment

News type: Collaboration/Partnership

- General Motors will rely on an almost completely wireless battery management system for its upcoming electric car models. The company claims that the system should thus be much easier to adapt to new models from a common set of battery components. GM worked with the company Analog Devices for the wireless battery management system. The aim is to help bring GM's Ultium electric vehicles to market faster as development time for specific communication systems or wiring diagrams for each model should be reduced to a minimum.
- The implementation of wBMS eliminates the traditional wired harness, saving up to 90% of the wiring and up to 15% of the volume in the battery pack. It also improves design flexibility and manufacturability without compromising range and accuracy over the life of the battery. This wireless system also provides a unique repurposing capability for battery reuse in secondary applications more easily than conventional wired monitoring systems.
- GM's wireless battery management system is protected by cybersecurity measures that are aligned to the company's all-new electrical architecture or Vehicle Intelligence Platform. The core of this system includes protective features within the hardware and software layers, including protection of wireless communication.

Volvo Buse's partners with Batteryloop on second-life applications for electric bus batteries

"Volvo Buses is one of the pioneers in electromobility which provides clean, quiet and efficient public transport. We have a clear-cut sustainability strategy at every single stage of our value chain, and we are now taking yet another step forward through planned, consistent reuse of bus batteries. In our electromobility operation we are thus creating a new circular business cycle and this cooperation is truly a major step in the right direction." - Håkan Agnevall, President of Volvo Buses



10 Sep 2020

Press release

Read this story →

Volvo Buses and Stena Recycling subsidiary Batteryloop are collaborating on second-life applications for batteries from Volvo electric buses. The new recently signed agreement has a global reach. It covers all the batteries for which Volvo Buses is responsible for its electric buses the world over.

Analyst comment

News type: Collaboration/Partnership

- Volvo Buses is providing the batteries from its electric buses with a second life as stationary storage on a large scale. Batteryloop is a subsidiary of Stena Recycling that also guarantees to recycle once the batteries have spent two lives in Volvo buses and as stationary energy storage.
- Batteryloop already runs a [second-life project](#) with batteries from Volvo Buses in Gothenburg. In co-operation with Stena Property and Stena Recycling, the company will use its electric bus batteries as stationary energy storage in the Fyrklövern complex in Gothenburg. The project is a step towards the circular economy in Electromobility, creating new commercial possibilities for companies.
- In addition to reuse, under the agreement, Batteryloop will also guarantee safe and environmentally suitable recycling when the batteries come to the end of their second life as energy storage units. The company thus offers a sustainable circular solution for Volvo Buses batteries.

Mercedes-Benz eCitaro G enters the market with a Solid-state battery option

Mercedes-Benz is continuing resolutely on its path towards the electrification of city buses: the new eCitaro G is the first all-electric articulated bus to bear the three-pointed star. The two new battery versions will also be used for the Mercedes-Benz eCitaro solo bus, which was launched in 2018.



15 Sep 2020

Press release

Read this story

Daimler announced the launch of its 18m new fully-electric articulated Mercedes-Benz eCitaro G electric bus. The bus, besides the standard NMC battery, is optionally equipped with innovative solid-state batteries. With this battery concept, Mercedes-Benz takes the technological lead not just in the bus segment, but in automotive construction worldwide. The new eCitaro G is the first series-production city bus in its category anywhere in the world to get equipped with solid-state batteries.

Analyst comment

News type: Product Launch

- While the standard lithium-ion batteries (NMC chemistry, with liquid electrolyte) can be configured from 296-396 kWh (9 to 12 packs, 33 kWh each) for the real-world range of up to 170 km (106 miles), the more energy-dense solid-state batteries can store 441 kWh (seven 63 kWh packs) for up to 190 km (118 miles) of range. According to the company, the solid-state battery has **25% higher energy density**, is environmentally friendly (no cobalt), and long-lasting. On the other hand, they are not ready for ultra-fast charging and it seems that the maximum system capacity is just 12% higher (441 kWh vs. 396 kWh).
- Toyota looked to be ahead of the pack with its decade-long research on solid-state batteries, and the promise that it would reveal a car with a **solid-state battery** at this year's (COVID-cancelled) Olympics. But with the Olympics canceled, Toyota seems to have stretched its plans to reveal its solid-state battery EV. Volkswagen is also very keen on developing the solid-state battery and this can be confirmed through its recent investment of **\$200M** in solid-state startup QuantumScape. The startup has also revealed its plans to go **public**.
- Solid-State batteries are now attracting more interest than ever as they are seen as the potential successors of the traditional lithium-ion battery. The research and development for the solid-state battery have been high during the first half of 2020. A large number of research institutes are working and developing novel materials (**electrolyte**, **interlayers**, etc.) to enhance the performance of these batteries. Startups such as **Prologium**, **Solid Power** are partnering with OEMs to narrow the commercialization timelines of solid-state batteries to the near future.
- On the other hand, there are still some OEMs who believe that solid-state batteries are not yet ready to emerge in the market. **BMW** stated that these batteries are still at least seven years out. But now with the launch of Mercedes-Benz eCitaro G, solid-state batteries seem like they are in for some serious competition as an alternative source for powering future EVs.

02

Spotlight of the month

*South Korean Battery
Manufacturer(LG Chem) on Fast
Growth Track*



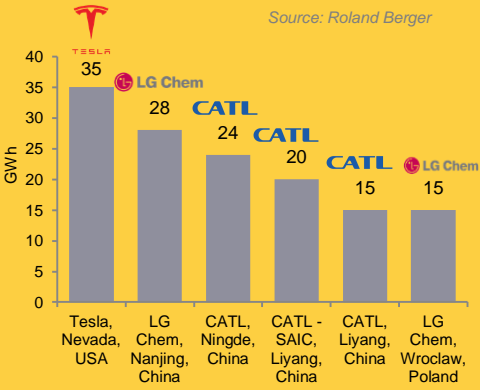
LG Chem

SPOTLIGHT

LG Chem leads in the battery market during the COVID period displacing CATL and Panasonic
 Read more about LG Chem in our [H1 2020 Deep Dive](#)

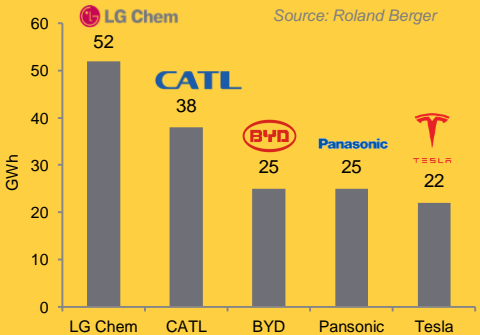
World's biggest battery plant in 2019 (GWh)

Source: Roland Berger



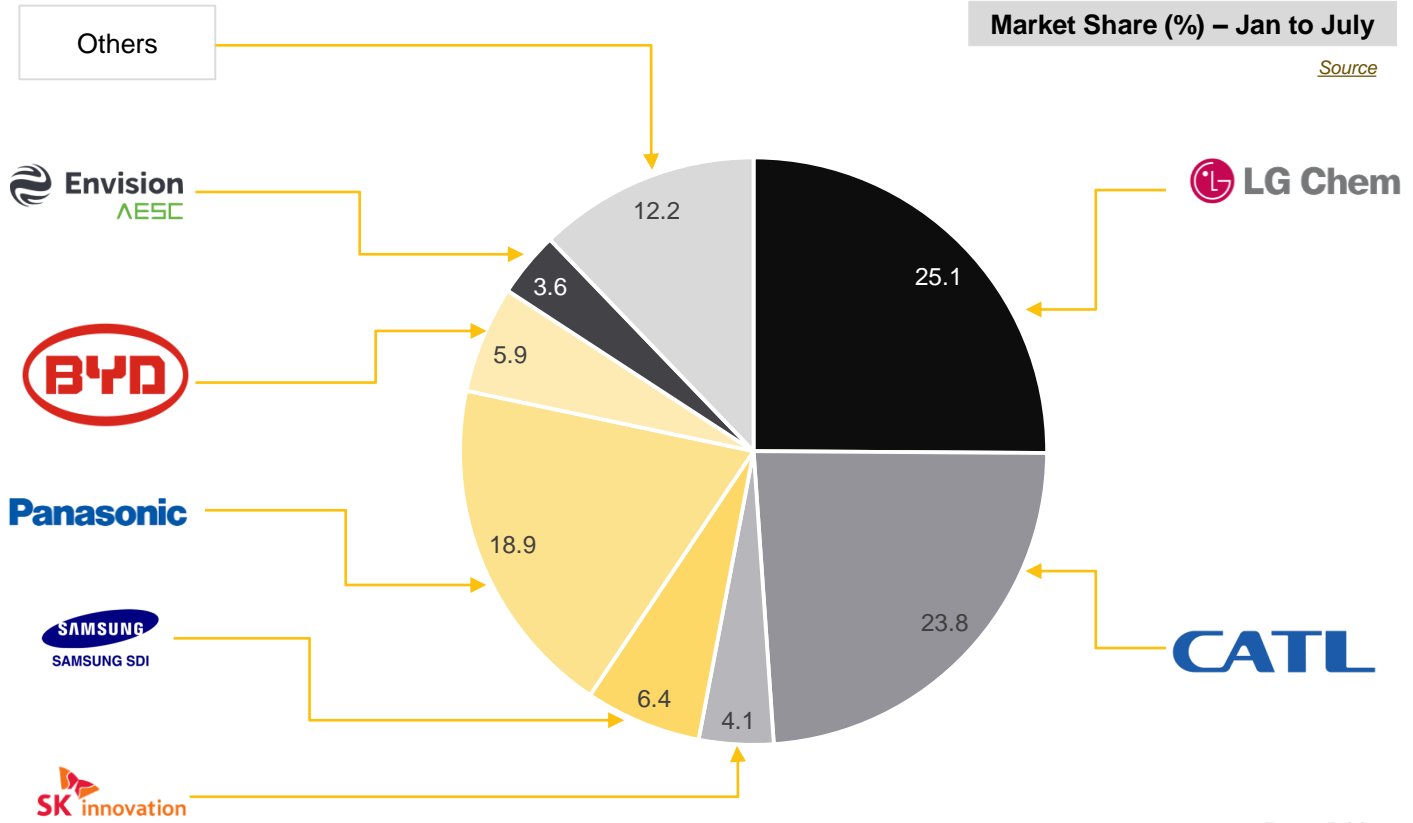
Lithium ion battery producers by capacity in 2019 (GWh)

Source: Roland Berger



Market Share (%) – Jan to July

Source



LG Chem Leads EV Battery Market Ahead Of CATL And Panasonic

During the first seven months of 2020, the global EV battery market amounted to **53.3 GWh**, which is **16.8% less** than a year ago (**64.1 GWh**). LG Chem is gaining a lot of momentum with its gigafactory in Europe and partnership with Tesla in China. Samsung SDI benefits from the growing volume of Audi e-tron, Ford Kuga PHEV (Ford Escape PHEV in the U.S.) and BMW plug-ins. SK Innovation supplies Hyundai/Kia. CATL battery sales in H1 2020 decreased by 20%



- **13.4 GWh** (up 97.4% from **6.8 GWh**)
- Market share of **25.1%** (up from **10.6%**)



- **3.2 GWh** (down 60.8% from **8.1 GWh**)
- Market share of **5.9%** (down from **12.6%**)



- **12.7 GWh** (down 25.5% from **17.0 GWh**)
- Market share of **23.8%** (down from **26.6%**)



- **1.9 GWh** (down 12.9% from **2.2 GWh**)
- Market share of **3.6%** (up from **3.4%**)



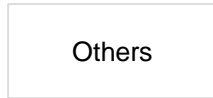
- **10.1 GWh** (down 30.9% from **14.6 GWh**)
- Market share of **18.9%** (down from **22.8%**)



- **2.2 GWh** (up 86.5% from **1.2 GWh**)
- Market share of **4.1%** (up from **1.8%**)



- **3.4 GWh** (up 52.6% from **2.2 GWh**)
- Market share of **6.4%** (up from **3.5%**)



- **6.5 GWh** (down 46.7% from **12.0 GWh**)
- Market share of **12.2%** (down from **18.7%**)

Market gain

Market lost

China and South Korea – Battle for Supremacy

South Korean battery manufacturers, particularly LG Chem and SK Innovation, are expanding their facilities in Europe and the USA and are signing long-term partnerships with OEMs to strengthen their position in the global battery supply chain. **LG Chem** expects revenue to double by 2025

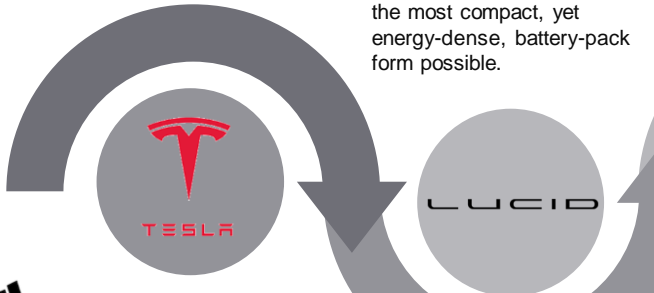


Battery cells partnership for Lucid Air

Lucid will leverage the specific cell chemistry of LG Chem's batteries to develop the most compact, yet energy-dense, battery-pack form possible.

Investment for expansion of facility

LG Chem has signed a €550M (~\$650M) green loan contract with Korea Development Bank (KDB), Export-Import Bank of Korea (Korea Exim bank), and Nonghyup Bank to finance the expansion of its production capacities in Poland.



Battery supply partnership

LG Chem plans to start producing batteries for Tesla vehicles at a domestic factory this year. Tesla has placed more orders for electric car batteries with South Korean battery major LG Chem.

Investment for building facility

The European Investment Bank (EIB) has signed a €480 million (~\$568M) loan agreement with LG Chem Wroclaw Energy to develop the group's battery production facility in Europe.

Investment for increasing production

LG Chem will invest about 65Bn KRW (~\$54M) by Q1 of next year to expand the production of carbon nanotubes (CNT) targeting EVs and batteries by 1,200 tons at its Yeosu plant in Korea. Once the expansion is made, LG Chem will have a total production capacity of 1,700 tons.

LG Chem, although invested less (~ \$1.27 Bn) than CATL (~\$ 3.2 Bn) but the success of the south Korean maker lies in the fact that LG Chem **increased its presence in Europe** more than CATL. Europe is going to be a high profile market for EVs in the future to come with combined BEV, PHEV, and FCEV models almost going triple in 2025 (333 from currently 100).

Roadmap and supply partnerships – LG Chem

South Korean battery manufacturers, particularly LG Chem and SK Innovation, are expanding their facilities in Europe and the USA and are signing long-term partnerships with OEMs to strengthen their position in the global battery supply chain. **LG Chem expects** revenue to double by 2025

Roadmap

- LG Chem will start mass production of lithium-ion cells in its new plant at Nanjing, China, in early 2020. The facility will be producing up to **32 GWh** annually by 2023
- Together with the first LG Chem plant in Nanjing, the total output will be more than **50 GWh** annually at some point in the future. In total, LG Chem plans to invest around 3 trillion won (~2.25 billion euros) in battery plants this year, increasing capacity to **100 GWh** before the end of the year.
- LG Chem plants
 - South Korea
 - China: two plants in Nanjing
 - China: a 50/50 joint venture with Geely Auto (expected 10 GWh annually from 2021)
 - Poland, Europe
 - U.S: One plant in Michigan and 2nd plant in Ohio. announced (50/50 JV with GM, more than 30 GWh annually)

Major supply partnerships



03

Appendix



Appendix – Key Industry developments

[Go back](#)

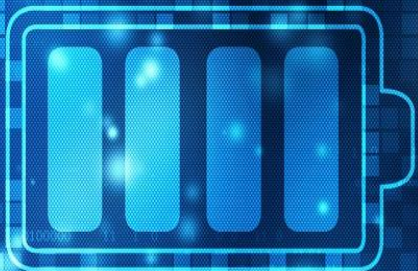
S.No	Date	Development	Type	Players Involved	URL
1	03-Sep-20	Solid-state battery company Quantscape to go public	Others	Quantscape	Link
2	02-Sep-20	Researchers at UCSD develop new disordered rock salt anode for fast-charging and safer lithium-ion batteries	Research	UCSD	Link
3	01-Sep-20	DOE awards Group14 Technologies \$3.96M to break technology barriers for Lithium-ion batteries	Funding	DOE Group14 Technologies	Link
4	04-Sep-20	Kyburz opens battery recycling facility in Zurich	Recycling	Kyburz	Link
5	07-Sep-20	KIT & Skeleton Technologies partner to develop graphene batteries	Collaboration	KIT Skeleton Technologies	Link
6	03-Sep-20	PSA in collaboration with Total launch the Automotive Cells Company (ACC) battery cell joint venture	Collaboration	PSA Total	Link
7	08-Sep-20	Hyundai & SK Innovation cooperate on battery eco-system	Collaboration	Hyundai SK Innovation	Link
8	07-Sep-20	SK Innovation pushes for 3rd EV battery plant in Hungary	Battery production	SK Innovation	Link
9	09-Sep-20	GM and Analog Devices partner for first wireless battery management system	Collaboration	GM Analog Devices	Link
10	11-Sep-20	Kenworth opens orders for two electric trucks	Product launch	Kenworth	Link
11	14-Sep-20	BMW Brilliance Automotive doubles production capacity for high-voltage batteries in China	Battery production	BMW Brilliance Automotive	Link
12	13-Sep-20	China's Envision eyes France for new EV battery factory	Battery production	Envision	Link
13	10-Sep-20	Volkswagen to source battery raw materials responsibly	Others	Volkswagen	Link
14	12-Sep-20	Volvo Buses partners with Batteryloop on second-life applications for electric bus batteries	Second-life	Volvo Buses Batteryloop	Link
15	10-Sep-20	DOE, DoD and other federal agencies launch the Federal Consortium for Advanced Batteries	Others	DOE DoD	Link
16	09-Sep-20	Solvay and Veolia partner to renew the life cycle for electric car batteries	Collaboration	Solvay Veolia	Link
17	09-Sep-20	BATTERY 2030+ projects kick-off looking for better cells	Others		Link
18	14-Sep-20	Lithium-ion battery capacity for new BEVs sold in US reached a record high in 2019 as per US DOE	Others	US DOE	Link
19	14-Sep-20	Li-Cycle to build battery recycling Hub in the USA	Recycling	Li-Cycle	Link
20	17-Sep-20	LG Chem splits battery business and officially launch the spin-off, named LG Energy Solution	Others	LG Chem	Link
21	20-Sep-20	CATL partners with Sichuan government to build world-class lithium battery business cluster	Battery production	CATL	Link
22	16-Sep-20	PPG receives \$2.2M from DOE to study coatings applications in automotive lithium-ion batteries	Funding	PPG DOE	Link
23	15-Sep-20	Mercedes-Benz eCitaro G enters market with Solid-state battery option	Product launch	Mercedes-Benz	Link



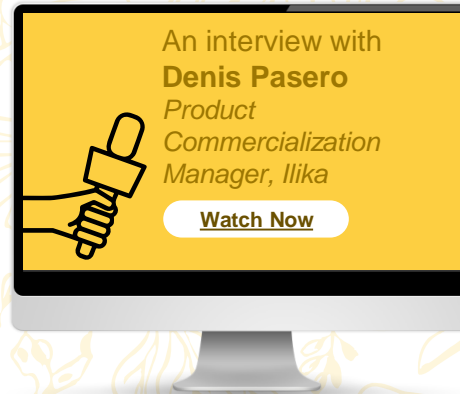
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Battery Energy Storage Pulse Q3

15th October 2020



INSIDER TV



We recently sat down with Ilika's Product Commercialization Manager Denis Pasero to discuss the future of solid-state batteries. For over a decade, UK's Ilika has been developing new materials for energy and electronics markets for such global leaders as Rolls Royce and Toyota.



My Business Objective

Have a question? Need a
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